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ABSTRACT

An overview of some of the important developments in the psychology and teaching of reading during the past ten years is presented in this booklet. Four developments that are characteristic of the decade are described in an introduction: reading and social conscience, growth in reading research, increase in interdisciplinary advisory committees, and growth in the professions of reading. Central issues during this period focused on how to teach the beginning reader, when to start instruction, concern for mature reading, reading and learning disabilities, early prediction and intervention, testing and evaluation, readability measurment, and environmental factors related to reading development. Each issue is discussed in a separate section; a bibliography completes the booklet. (KS)

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Reading 1967-1977: A Decade of Change and Promise

Fastback 97

By Jeanne S. Chall

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Introduction: Characteristics of the Decade

I present here an overview of some of the important developments in the psychology and teaching of reading during the past 10 years. Much has happened in the field during the decade—probably more than in the preceding 50 years. The task of selecting the developments has not been an easy one. It became possible only when I accepted the fact that it had to be a personal selection—one individual's story. But, it is also based on my participation during these 10 years in many activities related to reading—on national advisory committees, in research planning groups, and in professional commitments.

I try to capture the essence of the decade—the major happenings and changes from 1967 to 1977. What contributed to these changes? What were the results of these changes? Understanding these developments, I assume, can help us make more rational decisions in the present and future.

Four developments are so characteristic of the decade that they will be presented first.

1. *Reading and the social conscience.* The event of greatest importance, and the one that set the tone for the decade, was a 1969 address by James E. Allen, U.S. commissioner of education. In it, he proclaimed the "right to read" for every man, woman, and child. He said, in essence, that reading is the very life of the individual—and of the society. He noted that for more than a quarter of our population who read poorly or not at all, "the whole world of knowledge and inspiration available through the printed word had never been opened. . . . These individuals have been denied a right—a right as fundamental as the right to life, liberty, and the pursuit of happiness—the right to read" (Allen, 1969).*

*The complete citation for references shown in parentheses in the text can be found in an alphabetical list (by authors) in the last pages of this fastback.

The social conscience now called for a high level of literacy for all, not mere ability to read simple sentences. It recognized that knowledge and inspiration cannot be won from the minimal literacy of a fourth-grade reading level. Indeed, the National Academy of Education's Reading Committee, formed at Allen's request, recommended a twelfth-grade level of literacy for all adults—"roughly, the ability to read with understanding nearly all the material printed in a magazine like *Newsweek*" (Carroll and Chall, 1975, p. 8).

The low levels of reading ability that aroused the concern of Allen and other national leaders were more than confirmed by major surveys. For example, the first large-scale national survey of school achievement, reported in 1966 by James Coleman and associates, found great discrepancies in reading achievement among children and young people who had completed the same number of years of schooling. The lowest achievers at all ages, particularly among twelfth-graders, were children from minority groups, bilinguals, and children from a low socioeconomic background (Coleman, 1966).

The Harris survey (1970) of the ability of a cross section of adults to read material important in coping with everyday problems (e.g., driver's licenses, Medicare applications, etc.) indicated that large numbers performed poorly. Facility in this kind of reading was related to the number of years of school completed and to socioeconomic status.

A study of reading comprehension in 15 countries (Thorndike, 1973) found essentially the same relationships. There was wide variation in ability at each age level, which tends to be associated with family background within nations and with the nation's level of wealth. Thus the average reading achievement of children and young people in the developing countries was considerably below that of the developed countries.

The most recent evidence on the centrality of reading in educational achievement was found by Benjamin Bloom (1976). He showed that failure to learn to read by the end of grade 1 is predictive of later failure. A child's grade 6 reading score predicts rather accurately his achievement in high school and even whether he will enter college.

It is thus fitting that government poverty programs include the improvement of literacy as one of their goals, as do the Title I (Elementary and Secondary Education Act of 1965), Office of Economic

Opportunity, Adult Basic Education, and the Right-to-Read programs.

The importance of reading for the development of the individual continues to be strongly supported by the public. Support is apparent, for instance, in the back-to-basics movement and the movement for black youth led by the Reverend Jessie Jackson. There is also a new interest in literacy among cross-cultural cognitive psychologists who are studying the effects of literacy on the cognitive development of Africans who have never attended school (Olson, 1975).

Ten years ago there were comments by some intellectuals that literacy was perhaps overrated and that the electronic media could be a good substitute for print. Others were concerned that universal literacy might lead to acceptance of "establishment ways." Currently there is a greater faith in the importance of reading. Indeed, the general belief is that a minimum competence in reading is necessary for all high school graduates. Gene Maeroff reported in the March 13, 1977, *New York Times* that seven states have recently mandated minimal competence in reading as a prerequisite for high school graduation. It is significant that this development follows a series of lawsuits brought against school systems by parents of high school graduates who were barely literate after 12 years of schooling (Chall, 1976).

2. *Growth in reading research.* Another characteristic of the decade is the great growth in basic and applied reading research funded by government agencies and private foundations. This research has been conducted by scientists from many disciplines, i.e., psychologists, linguists, psycholinguists, computer scientists, reading specialists, and neurologists.

The period was also characterized by growth in the number of multidisciplinary teams for basic research and the development of reading programs. One of the earliest of the teams of scientists who stimulated basic reading research was formed in the early sixties at Cornell University with funds from the Office of Education. The most recent is the Center for Research in Reading at the University of Illinois, founded in 1976 with funds from the National Institute of Education.

During the decade reading research became "big science." The typical research project was no longer carried out by a college professor with the assistance of one or more of his graduate students.

Nor was it done by a reading specialist in a school with the help of a few teachers. Research projects were typically undertaken with the support of government grants and were carried out by a group of investigators. The curriculum projects were usually carried out in university-affiliated research and development centers, some of which had fairly permanent staffs. Toward the end of the decade, more curriculum development projects were conducted by educational consulting firms not directly connected with a university.

3. *Increase in interdisciplinary advisory committees.* The period from 1967 to 1977 was also characterized by many interdisciplinary committees that advised on the solution of the national reading problem. I mention only a few: the secretary of HEW's National Advisory Committee on Dyslexia and Related Reading Disorders, which prepared a report, *Reading Disorders in the United States* (1969), on preventing, treating, and studying the problem of reading failure; the Reading Committee of the National Academy of Education, which prepared a report, *Toward a Literate Society* (1975), that presented a diagnosis of the literacy problem, guidelines for solving it, and position papers commissioned by the committee; and the Study Group on Linguistic Communication to the National Institute of Education, whose report, *Linguistic Communication: Perspectives for Research*, was published in 1973.

4. *Growth in the Professions of Reading.* The 1967-77 decade was also characterized by growth in the number of professional groups concerned with reading. The International Reading Association more than doubled—to 70,000—during the decade. The Association for Children with Learning Disabilities, established in the 1960s, also grew at a great pace, as did the Orton Society and the National Council of Teachers of English.

Professionalization of reading is also seen in the increase in numbers of graduate programs in reading. In 1973 approximately 66 universities offered the doctor's degree and nearly 200 offered master's degrees in reading (Wanat, 1973).

Now to some of the issues that were studied, discussed, and debated during the decade. It should be remembered that these issues were debated against a background of growing commitment to pro-

vide literacy for all—the poor, the bilingual, the learning disabled—and against a background of "big" research, national advisory committees, and growing professional strength.

It is not surprising, therefore, that the debates and the changes of the past decade have involved the most fundamental issues in reading: when to start the teaching of reading; how to teach the beginner; concern for mature reading; reading and learning disability; early prediction and intervention; testing and evaluation; readability measurement; and environmental factors related to reading development.

How To Teach the Beginner

Ten years ago one of the major concerns of teachers, administrators, textbook publishers, and parents was how best to start the child on reading.

The prevailing view on beginning reading methods in 1967 was to start by teaching whole words, emphasizing reading for meaning from the start. Phonics and other word analysis skills were to be introduced later and slowly. Throughout the elementary grades, a controlled, high-frequency vocabulary was to be used (Chall, 1967).

This approach, classified as a meaning emphasis (Chall, 1967), assumed that there is no fundamental distinction between the reading processes of the beginner and the mature reader. In essence, it proposed only one reading process—the mature one.

In the middle 1960s there was a perceptible but slow movement away from a meaning emphasis to a code emphasis—one that put an earlier and heavier emphasis on the relationship between sounds and letters (Chall, 1967). By the late 1960s and early 1970s the trend was definitely in the direction of code emphasis. By the middle 1970s most of the published beginning reading programs had a code emphasis (Popp, 1975). Even those that were classified as meaning emphasis had earlier and heavier decoding programs in the first grade—an emphasis on phonics found only in the strongest code-emphasis programs of the early 1960s.

What brought about this change? No doubt it was a long and growing discontent with the results achieved by existing methods. There was also research support for the change. *Learning To Read: The Great Debate* (Chall, 1967), by synthesizing the relevant research on beginning reading (from 1910 to 1965) and by analyzing the major reading programs, provided the facts needed for discussion and decision. The conclusion that the evidence was stronger for a code em-

phasis than for a meaning emphasis seems to have had a substantial effect on the published reading programs that followed, on methods textbooks, and on research (Chall, c. 1977, in press).

Other support for code emphasis in beginning reading programs came from the 27 USOE first-grade cooperative studies coordinated by G. L. Bond and R. Dykstra (1966). This research showed that children using first-grade basal reading programs with a supplementary phonics program did better than those with a basal reading program alone.

Almost universal acceptance of a code-emphasis approach to beginning reading is found by the end of the decade in the heavier decoding programs of the published basal reading series and in the profusion of kits, games, devices, multimedia materials, and workbooks for decoding. Indeed, perusal of recent issues of *The Reading Teacher* (December, 1976; and January, 1977) reveals a sizable number of ads for decoding materials and a considerable number of reviews of instructional materials for decoding programs.

Other evidence of the acceptance of decoding as a beginning reading goal can be found in the addition, in the early 1970s, of separate subtests on decoding (often called word analysis or word study) for the lower grades in two of the major standardized reading tests.

"Sesame Street" and "The Electric Company" gave further reinforcement to decoding skills as an essential in beginning reading. Millions of children who viewed these programs on TV had firsthand experience in learning to decode as an early step in learning to read (Gibbon et al.,1975).

Some minority opinions are being voiced about the place of decoding in beginning reading. Among these are the writings of Frank Smith (1971) and of Kenneth Goodman (1974). Both take the theoretical position that there is but one reading process—a mature process. They do not distinguish beginning from later reading. For them, reading is "for meaning" from the very beginning. They claim that early teaching of letters and sounds can distract the child from seeking and achieving meaning from reading. This theoretical view of reading is similar to the meaning-emphasis view of W.S. Gray that was predominant from the 1920s to the 1960s in the major basal reading programs.

The theoretical view of reading proposed by those preferring a code-emphasis beginning is that reading is essentially different at the

beginning and at the more mature levels. It changes qualitatively as the reader progresses. At the beginning, the major task is learning the relation between the sounds and the letters in words. Later, reading becomes increasingly based on the acquisition of meaning and on interpretation.

What is the evidence today on these two theoretical views of beginning reading? A recent review of the relevant research over a 60-year period by Dykstra (1974) concludes that code emphasis is more effective than meaning emphasis and brings most children to independence sooner.

Indirect evidence that code emphasis is probably more effective than meaning emphasis for beginning reading comes from the recent comparisons between reading achievement of children today with those of five or 10 years ago. All comparisons of reading achievement at grades 1, 2, 3, and 4 seem to indicate that the children of today are ahead of those of five and 10 years ago. Although factors other than method may have contributed to the improved results, a tenable hypothesis might well be that the stronger decoding programs introduced in the late 1960s and early 1970s, together with other changes brought about by them, such as heavier vocabulary loads, more difficult stories, etc., made possible the earlier development of reading skills (Chall, 1977b).

There are other rumblings of discontent. Some come, I think, from too diligent an application of decoding procedures in the total reading program. In their enthusiasm, many authors, publishers, and teachers may be extending the decoding practice too far, and students may be spending too much time on it. This may be so both for the highly programmed decoding materials and for the teacher-made exercises. Thus stories and books, the true vehicles for reading for meaning, may be neglected in the zeal for mastery of decoding. Moderation here, as in all of life, should be valued. That it is easy to overdo the decoding and thereby build up to a strong reaction was anticipated in *The Great Debate*:

> I recommend a code emphasis only as a *beginning* reading method. . . . I do *not* recommend ignoring reading-for-meaning practice. . . . [Some] are already misinterpreting the evidence. They are developing decoding exercises for upper elementary and high school pupils, erroneously assuming that if this approach is good at the beginning, it is also good later on. . . . If pupils can already do this, the teachers and the au-

thors and publishers who give them decoding exercises are building another kind of superstructure that is bound to produce another reaction. If they continue, we will be confronted in 10 or 20 years with another best seller: Why Robert Can't Read. The culprit in this angry book will be the "prevailing" linguistic, systematic-phonics, or modified alphabet approach—whichever happens to "win out" now. The suggested cure will be a "natural" approach—one that teaches whole words and emphasizes reading for meaning and appreciation at the very beginning [Chall, 1967, pp. 307, 308].

When To Start

Theories about when it is best to start teaching reading have also gone through an almost complete reversal in the past 10 years. In 1967 the prevailing view was: The later the start, the better. Most theories of reading emphasized the need for reading readiness, i.e., practice of preparatory skills before formal reading instruction is begun. Indeed, most methods textbooks listed lack of reading readiness as a major cause of reading failure. Since the early 1970s the prevailing view has changed. Now it is: The earlier the start, the better.

A strong movement for early instruction in general and for early reading instruction in particular began around the early 1960s. Among the first proponents of early reading were followers of Montessori, some supporters of Head Start, and a growing number of parents who sought high academic achievement for their children.

Strong confirmation for an early start came also from the research on early readers by D. Durkin (1966 and 1974-75). A follow-up of the subsequent achievement of the early starters—those who read before they entered first grade—found that the early starters were still ahead of their controls at grade 3 and grade 6. While all early readers seemed to benefit, the advantages of early reading were relatively stronger for those whose IQs were closest to normal.

Another strong impetus for an early start came from the enormously successful TV shows "Sesame Street" and "The Electric Company," which started in the late sixties and early seventies. It would seem that when parents and teachers saw their preschoolers learning to read from these shows, with no obvious harmful effects, they could not continue to hold the view that the later the reading start, the better. These shows gave popular legitimacy to early reading. Thus, for several years now, it has become common practice in pub-

lic schools to teach a little reading in kindergarten: letter names, consonant sounds, some sight words, and a preprimer or two—and a little writing also: the child's name, letters, etc. Ten years ago this would have been considered bad professional practice.

Related to the issue of when to start are these: Where should reading be taught? Who should teach it? Here, too, there have been reversals in professional consensus in the past 10 years. In 1967 the conventional wisdom was that a child learns to read best from a professional teacher in school. Indeed, much of the educational literature and the popular press cautioned *against* parents teaching their children to read.

During the decade there has been a great change in these views. Parents as teachers of their young children have become accepted again; the classroom has been extended to the home; and the paraprofessional has been brought into the classroom. Many more parents today are teaching their children to read at home. Their instruction is based either on their own knowledge or on the advice found in books now available for that purpose and on published kits, cards, workbooks, and multimedia devices.

An extremely informative review of the history and research on teaching young children to read at home, as well as a guide to parents (Smethurst, 1975), found practically no evidence that such early learning had negative effects. Indeed, the research, as well as the many reports and testimonials, seemed to indicate that early reading had a beneficial effect on the child's reading, general achievement, and mental development.

The present general consensus that an early start is to be preferred is not going unquestioned, however. Among those who doubt its value are Piagetian psychologists. H. G. Furth (1974), for example, opposes an early start in reading because, he says, it may be detrimental to cognitive growth. D. Elkind (1965), too, believes that many children have not reached the cognitive development required for learning to read when they reach grade 1.

Thus there appear to be some differences of opinion as to the value of an early start. Those who now call for a later start offer as evidence a particular theory, primarily that of Piaget. Practically no empirical or tested evidence is offered along with the theory. Indeed, the available tested evidence, although limited, continues to be stronger for an earlier than for a later start.

Concern for Mature Reading

At the beginning of the decade the emphasis in reading research and in curriculum development was on early reading. In the late 1960s there were calls for studying mature reading (Jenkinson, 1969; Chall, 1969; Simons, 1971), and increasing attention was paid to the study of later reading skills, particularly to reading comprehension in the middle grades and beyond.

The growing concern for mature reading and for reading comprehension is symbolized by the reprinting of E. L. Thorndike's classic article of 1917, "Reading as Reasoning," in a 1971 issue of the *Reading Research Quarterly;* the NIE-sponsored conference on language and reading (1973); and establishment of the NIE-funded Center for Research in Reading at the University of Illinois (1976).

Why is the focus of reading research shifting from early to more mature reading? I suggest that it comes as much from success as from failure. The research and development on early reading did produce better results, which brought into clearer focus the failures at the later levels. Greater retention of high school students and higher proportions entering college increased the numbers who were reading poorly at these higher levels. It also stems, no doubt, from the fact that the reading task changes substantially as the student grows older. At first the major task is decoding (relating sounds to letters and words whose meanings are already known); at the middle grade levels and higher the major task is to read for information, meaning, and pleasure materials that go beyond the reader's immediate knowledge and linguistic development.

Reading Comprehension: General or Specific

Probably the most far-reaching theoretical question on reading comprehension is whether it is a general skill or ability or whether it is made up of a number of specific, identifiable skills.

This debate was launched recently by Robert L. Thorndike (1973-74), who took the position that reading comprehension is a unitary ability composed mainly of verbal reasoning. He based this idea on an analysis of the results of the international study on reading comprehension in which the U.S. and 14 other countries participated. At the other extreme is Frederick Davis's concept of reading comprehension. He concluded from considerable study that comprehension is composed of separate skills and abilities, such as understanding word meanings, verbal reasoning, getting the main idea, detecting the author's mood, and discerning word meanings in context (1971).

These two theories of reading comprehension can lead to considerably different approaches to testing and teaching. If the specificity concept is accepted, then both tests and instructional materials will pay particular attention to the different comprehension skills. A general concept of reading comprehension will lead to a more global approach to reading improvement, one that tries to develop reasoning ability by reading and other means.

Within the area of adult literacy, T.G. Sticht (1975) holds a specific comprehension theory proposing that reading materials and exercises be devoted to work-specific content rather than to the general reading materials used in secondary schools.

Relationship of Reading to Language

Over the decade there has been a growing interest in the relationship between reading and language. The first expressions of this interest appeared in the research of the early 1960s that reported positive correlations between reading achievement and spoken and written language ability for children in grade 4 and above, although no relationship was found at the earlier grades (Loban, 1963).

The theoretical background of these studies came from linguistic theory, particularly Noam Chomsky's transformational grammar. From this theory a set of assumptions began to evolve with regard to how reading skills develop and how they are best learned. In light of the significant interrelatedness of reading and language, reading theorists emphasized that language is the primary skill, with reading skills developing from it. These reading experts accepted Chomsky's theory that language is innate, and if reading skills rest essentially on language, then the ability to read should also develop

naturally—i.e., without formal instruction. What would be the natural way of learning to read? Not systematically, some have proposed, for no one learns to speak that way. In terms of existing approaches to teaching reading, the "natural" method would most resemble the language-experience approach, a method based on the pupil's dictating, writing, and then reading his* own stories. It should be noted that this approach was developed and used considerably before the modern psycholinguistic theories. Another natural method studied by Carol Chomsky (1975) is based on spontaneous writing and invented spelling.

Kenneth Goodman's model of reading as a "psycholinguistic guessing game" also stems from the linguistic theories of the 1960s. His miscue analysis (Goodman and Burke, 1969), a method for analyzing oral reading errors in linguistic terms, has been used for research on the relationship between reading and language.

It is significant that a large proportion of the outstanding dissertation awards given by the International Reading Association during the past 10 years were for research on the relationship between language and reading. And at least four recipients of the David Russell Research Awards given by the National Council of Teachers of English have been active in research on the relationship between reading and language.

Among the significant research in this area has been a study of the effects of exposure to books on language growth and reading achievement. This exposure includes the extent to which children are read to or read independently (Chomsky, 1972). A substantial and significant correlation was found between reading exposure, language maturity, and reading achievement. In further analyses of what caused what, Carol Chomsky concluded that the key was the number of books read to or by the children, particularly those that were above the child's own level of linguistic maturity. Thus, it would appear that being read to and reading on one's own are major vehicles for learning the more complex literary language needed for progress in reading as well as in language.

*For clarity and economy, we use the masculine form of pronouns throughout this fastback when no specific gender is implied. While we recognize the trend away from this practice, we see no graceful alternative. We hope the reader will impute no sexist motives; certainly no sexism is intended. —*The Editors*

Writing and Reading

The positive relationship between reading and writing was demonstrated in the longitudinal studies of W. Loban (1963). There is general agreement that ability to read and ability to write are related, although there has been little substantiation for belief in a direct causal relationship.

The evidence that does exist seems to indicate that sentence-combining exercises can improve students' ability to write more mature sentences (Mellon, 1969). There is some evidence that these same exercises may result in improvement of reading comprehension as well (Stotsky, 1974).

Adult Literacy, Post-High School, and College Reading

One of the "growth areas" during the decade has been in reading improvement programs for adults. These include basic literacy programs, programs for adults studying to pass high school equivalency examinations, programs for men and women in prisons, programs for the armed services, and special reading and writing improvement programs for high school students in the lowest third of their classes and for college students in open-admissions community and four-year colleges. These "new" college students, when admitted as freshmen, may test as low as the seventh- or eighth-grade reading level. (Carroll and Chall, 1975; Cross, 1976).

Judging from the number of books and papers devoted to adult reading programs and to the courses and workshops for the students and for their teachers, interest in this area of reading is growing. According to Patricia Cross, who has written two books on the "new" college student, *Beyond the Open Door* (1971) and *Accent on Learning* (1976), these students can and do learn, but it is not yet known to what level and by what kind of instruction they learn best. Cross concludes, with regard to remedial and developmental education:

> Remediation should be approached with flexibility and open-mindedness. There is still much that we do not know. We do not even know which skills developed to what level are important to academic survival. . . . We need to determine the kind and level of academic skills that are essential to life in our complicated society, and to try to help each student accomplish these basics—which are probably much less complicated than we presently assume . . . (Cross, 1976, pp. 44, 45).

Reading and Learning Disabilities

During the 1960s a new professional group called learning disability specialists joined the reading specialists in the diagnosis and treatment of children with reading disabilities. Coming from the field of special education, they brought a different approach to diagnosing and treating children with reading disabilities. The label they used for a reading problem was also different. They called it learning disability, dyslexia, or special language disability.

They defined learning disability in terms of the existence of "a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in imperfect ability to listen, think, speak, read, write, or do mathematical calculations. . . . [the term] does not include children who have learning problems that are primarily the result of visual, hearing, or [other] motor handicaps, of mental retardation, of emotional disturbance, or of environmental cultural, or economic disadvantage" (Office of Education, Bureau of Education of the Handicapped, Request for Proposals 77-62, 1977, p. 3; Kirk and Kirk, 1970).

How many children and young people have a reading or learning disability? If the criterion of reading disability is used (a significant discrepancy between mental age or grade and reading achievement), then the estimate is about 15% of the population (National Advisory Committee, 1969). The estimate drops to 7% when the learning disability label is used (Myklebust, 1971), and to 2% by the definition of some government agencies.

The learning disability specialists have brought to the field of reading disability many changes in diagnosis, treatment, and ways in which the child is viewed. The changes in diagnosis are mainly

in the use of tests of "underlying psychological abilities" such as visual, visual-motor, auditory perception, and other psycholinguistic abilities. The remedial treatment may vary, consisting either in making up the deficits found, in basing instruction primarily on the strengths, or in a combination of both (Kirk and Kirk, 1971).

In the early 1970s these assumptions began to be challenged, as research accumulated which questioned the effectiveness of perceptual training for the improvement of reading. Indeed, there has been a growing skepticism about both the value of perceptual training and the importance of visual perception in reading. There is now a new interest among learning disability researchers and practitioners in the direct teaching of the deficient academic skill—i.e., reading. More of the articles in the *Journal of Learning Disabilities* are concerned with the teaching of reading. There is also a growing interest in the relationship of difficulties with language to difficulties in reading (Chall, 1977a).

These changes, within a little more than 10 years, are reminiscent of those that occurred during the 1950s. From the late forties to the middle fifties there was a strong consensus among many that the underlying cause of reading disability was emotional. Psychiatrists were prominent in the diagnosis of reading disability, and psychotherapy was a commonly recommended treatment. The assumption was that, once the emotional problem was treated successfully, the child's reading would come along.

By the middle 1950s research reports began to appear indicating that psychotherapy without remedial reading did not improve the child's reading. And the consensus began to shift to preference for remedial reading as the more effective treatment. Thus teaching reading rather than giving psychotherapy was the way to treat a reading disability.

The existence of the two groups, learning disability and reading specialists, both of whom may work with children with reading problems, raises questions about who should do what and how the work is to be coordinated. During the last few years joint meetings have been held among associations concerned with reading/learning disability—the International Reading Association, the Association for Children with Learning Disability, the Orton Society, etc. It is their hope that a consensus will be reached with regard to theories on

training, certification, and job responsibilities. This is sorely needed, since in most states learning disability specialists are not required to have special training in the teaching, diagnosing, and treatment of reading disabilities. Yet it is estimated that more than 70% of children recommended for diagnosis of learning disability have reading disability. If this is so, then it may well be that the children with the most severe reading problems may be assigned to those therapists who have no special training in reading—the learning disability specialists—while youngsters with the milder reading problems may be assigned to reading specialists who have more extensive training in reading.

Early Prediction and Intervention

Over the past decade there have been a number of developments in the prediction and prevention of reading and learning disabilities. The below-the-surface aspects of reading disability and remediation are being recognized and new predictive measures are growing out of current theories of neurophysiological, perceptual, and language development.

Most of the prediction tests developed from 1967 to 1977 are individually administered and give both a global evaluation of the child's preparedness for formal reading instruction and a diagnostic picture of his strengths and weaknesses. These tests have also been used to place children in special transition classes between kindergarten and first grade, where the child's weaknesses may be strengthened before he enters a regular first grade.

Two questions are important here: First, how do the early prediction tests compare with the older reading readiness tests? Second, how does each fulfill its purpose?

The tests are quite similar. Both are composed of language subtests and of tests of early reading skills (knowing the letters, matching words, etc.) and of various visual-perceptual (matching forms, words, and letters), visual-motor (copying forms and letters), and auditory-perceptual abilities (hearing rhymes and words beginning with the same sound). They also resemble each other in the strength of their ability to predict first-grade reading achievement. Although the readiness tests are usually given in small groups and the early prediction tests individually, their multiple correlations are about the same—about .6 to .7 (Chall and Hall, 1976).

The tests differ, however, in how the subtest results may be used. The authors of the newer early predictive tests generally encourage the use of subtest scores for evidence of a student's strengths and weaknesses that may then be turned into prescriptions for an inter-

vention program. The readiness scores are generally used only for placement of pupils in classes or in grouping within a class.

The designers of the early predictive measures had great hopes for the tests' usefulness. Many school systems tested children in kindergarten and even earlier. High-risk children, those predicted to fail if no special instruction were given, were placed in transition classes to prevent their failure in a regular first grade and to strengthen weaknesses.

At the end of the decade the concept of early prediction and prevention is still strong. But there appear to be, in at least one state, some important changes in implementation. Parents have become uncomfortable with the labels high risk, perceptually handicapped, or learning disabled and fear that this labeling might be more harmful to their children than the advantages from the transition class. As a result, fewer transition classes are being formed.

One weakness of both the traditional reading readiness tests and the newer predictive tests is their emphasis on the individual characteristics of the child. It is presumed that the tests measure stable characteristics of the individual. Yet recent research questions this presumption. It also questions sole reliance on individual characteristics for predicting reading success. The recent predictive study of J. Jansky and K. de Hirsch (1972) shows that teachers rated as adequate by their principals had about half as many students with reading disabilities as did those teachers rated as inadequate. Thus, even when children are predicted to have early reading failure, the probability of their failing can be reduced drastically if the teacher is adequate. A high-risk child could turn out to be a good reader if the teaching is good.

These findings are similar to the very early findings of Arthur I. Gates (1937), who concluded from studying different kinds of first-grade classrooms that in optimal classrooms children with mental ages below 6 could achieve well, while in classes with poor conditions, even children with mental ages above 6 had difficulty. In much of the recent professional literature and research in reading there is a growing recognition of the importance of the learning environment for achievement. The child's achievement depends not only upon his individual characteristics but upon the interaction between these and the school environment. A later chapter presents information on environmental factors and reading development.

Testing and Evaluation

One of the most significant developments over the decade has been the decline in confidence regarding norm-referenced standardized reading achievement tests. Criticisms have come from many sources. Some experts claim that the tests are biased against children from families with low socioeconomic status, minorities, and bilinguals. Others claim that the norm-referenced tests and subtests afford only a relative ranking of pupils and give little or no information on their masteries, strengths, and deficiencies. Thus norm-referenced tests, it is claimed, are useful mainly for selection, whereas teachers need tests to help them with instruction.

Paralleling the disillusionment with norm-referenced tests was the growth in interest in criterion-referenced or mastery tests. These were developed to overcome some of the shortcomings of norm-referenced standardized achievement tests. Criterion-referenced tests give results in terms of the masteries and deficiencies in particular skills.

Criterion-referenced tests for reading are available mainly for the elementary grades. Most of them are coordinated with instructional materials that serve a prescriptive purpose.

Questions have been raised about criterion tests and their coordinated materials. Do the separate subtests represent separate skills that warrant individual evaluation and specialized instructional materials? Can three or four items reliably test a particular reading skill? Is the information they yield worth the time the tests and their coordinated practice materials consume? In some schools where a criterion reading system has been adopted teachers have complained that with all the testing, checking, and exercising, the children have no time for reading books. If this is common in the cri-

terion-referenced reading programs, it is indeed a serious matter, for it has been agreed upon by all who study and teach reading that mature reading is not possible without the reading of books.

Another development in testing was the wider use of "cloze" procedure—the deletion of every n-th word (5th, 10th, etc.). This procedure was used for testing reading comprehension, for assigning students books of appropriate reading difficulty, and for developing readability formulas. Cloze tests were also used to teach comprehension, although there seems to be little research evidence of its effectiveness for this purpose (Almeida, 1975).

In actuality, cloze tests have been available since the 1950s, and the principle has been known even longer. Before 1950 they were called completion tests. Yet their wide use in testing, readability measurement, and instruction has developed mainly in the past decade.

Still another significant innovation of the decade was the establishment of nationwide assessment by the National Assessment of Educational Progress. For the first time, reading was regularly tested on a nationwide basis. By the end of the decade there had been several retests of reading to permit comparisons over time. A recent report notes that fourth-graders were performing better than fourth-graders of four years earlier. Another report based on various surveys found that in the then/now studies, the "now" children achieved higher in grades 1, 2, 3, and 4 (Harnischfeger and Wiley, 1976).

Roger Farr et al. (1974) also found higher reading achievement for the elementary school children of today. In the upper grades the comparisons did not lead to a clear advantage for either the present or earlier groups of children. However, there were some signs of a decline among the current groups in the higher grades.

It appears that more data are being collected on the reading achievement of children and adults than ever before and that more comparisons are being made as well. Closely related to the evaluation of reading is the reported consistent decline in SAT (Scholastic Achievement Test) scores, and particularly in the verbal scores, over the past 12 years. The verbal SAT test may be viewed as a kind of high-level reading test. It could be hypothesized, then, that the decline in scores illustrates a decline of high-level reading ability among at least the college-bound high school population who take the SAT. In-

deed, a recent study (Chall, 1977b) of the relationship between the degree of challenge of the textbooks used and the SAT scores of students using the textbooks suggests a relationship between the two. Students exposed to the more challenging textbooks in their elementary and high school years achieved the higher SAT scores. Those who were exposed to less challenging textbooks had lower SAT scores. These findings indicate the need for systematic study of the optimal level of challenge of textbooks.

Readability Measurement

Readability measurement, one of the oldest and most stable areas of reading research and one that has resulted in tools for selecting and developing textbooks and other instructional materials, has also undergone important changes. A major influence during the late 1960s came from the theoretical insights of transformational grammar. Thus much of the readability research at that time was concerned with the search for syntactic factors suggested by transformational grammar. Another change during the decade was the use of computers for constructing new readability formulas and also for testing readability (Klare, 1974-75). Still another change was the use of cloze tests instead of multiple-choice questions for testing reading difficulty in the development of readability formulas.

What has been the outcome of these efforts? Generally, it appears that the pursuit of new, more complex syntactic factors did not succeed in producing the more accurate readability measures that were sought. Although prototype formulas showed great promise, the syntactic factors were too complex to be used reliably in a readability formula (Bormuth, 1968). Indeed, there appears to be a return to the older readability formulas that put the heaviest weight on vocabulary difficulty, with secondary emphasis on syntactic difficulty as measured by average sentence length.

Several attempts have been made during the period to shorten the time for applying the readability formulas. One was Edward B. Fry's readability graph, which eliminates some computational steps (1968). There have been specialized formulas such as the Porter-Popp (1975) for measuring the readability of trade books for children in the primary grades. There has also been a revision of the Spache formula (1974). While the basic factors remained the same,

the more current materials used for standardization resulted in a revised formula that gives a lower grade level than the original Spache formula to the same material. It would appear that the reading programs of the 1967-77 decade were more challenging in vocabulary and sentence length for the same grade levels than the materials for the original Spache formula published in 1953.

Still another trend of the period was a return to earlier techniques for measuring readability: scaling and the comparison of selections to scaled passages of increasing difficulty (Singer, 1975; Carver, 1975-76; Chall, Bissex, Conard, and Harris, 1977). While the Singer and Carver scales use selections of mixed content, those of Chall et al. use separate scales for literature, social studies, and science.

Each of these scales was developed independently. Of even greater interest, each was motivated by the objective of making readability measurement simpler and less time-consuming than the traditional formulas, particularly for the classroom teacher.

A number of new word lists were published during the period: the *American Heritage Word Frequency Book* by John B. Carroll et al. (1972) and the long-awaited *Living Word Vocabulary* by Edgar Dale and Joseph O'Rourke (1976). The Dale-O'Rourke list is based on tests of children's knowledge of particular words, while the Carroll list is based on frequency in print. Both word books will be extremely useful to those responsible for developing, assessing, and selecting curricula and instructional materials.

The decade was characterized by intense interest in readability measurement and particularly in its applications to writing, editing, and selection of instructional materials for the elementary grades, high school, and college.

Why such strong interest? The most likely hypothesis is that concern for readability increases with increased variation in reading ability among those who are required to read given materials. Thus, the greater interest in readability of high school and college books and armed services manuals, for instance, probably reflects the wide range in reading ability among people who read those books.

It would be well to sound a note of caution about the use of readability formulas for effecting an optimal match between the books and the readers for whom they are intended. It should be noted that none of the objective readability measures tells how difficult reading material should be. Readability formulas seem to have been used

mainly to write, edit, and select easier books. A recent study of textbooks in relation to declining SAT scores would suggest that textbooks that are too easy may be detrimental to the development of high-level reading and interpretation skills. The concern should go, it seems, not only to books that may be too difficult but to those that may be too easy. Of even greater importance is that we study what constitutes optimal challenge at all levels and for students of varying abilities (Chall, 1977b).

Environmental Factors Related to Reading Development

The Coleman report (1966), published just a year before the decade we are examining, was one of the first large-scale studies to find family background more highly related to reading achievement than are school characteristics. These results were confirmed in 1973 by the IEA Study of Reading Comprehension in 15 countries. Indeed, this relationship was found within and between countries. The more developed nations had considerably higher reading achievement levels than the developing nations at all age levels tested. Within countries, the children of more affluent families achieved significantly better than the children of the less affluent.

In these studies variation in schools and teachers did not seem to have a strong impact, although there was some evidence that they had some influence, particularly on the lower achievers. The Coleman report found that students of more able teachers achieved higher on the verbal tests, and the effects seemed to be greater for pupils of minority status. Thus schools and teachers seemed to make some difference, and the difference seemed to be greater among those students who needed it most (Coleman, 1966).

An earlier, more limited study (Chall and Feldmann, 1966) found in an intensive study of 12 first-grade classes that the teachers did make a difference in the reading achievement of first-grade children. Among the factors significantly related to high achievement were general excellence of teaching, a thinking approach to learning, a code emphasis in reading, and instruction on an appropriate level of difficulty.

The IEA international study also found that in some countries, and for certain grades, such factors as a library corner in the class-

room and teachers who were members of professional associations were correlated positively with reading achievement.

In spite of these signs of the importance of school factors, there was a general sense of pessimism about the influence of schools on general achievement and on reading achievement during the early 1970s. This attitude was intensified by Christopher Jenck's report, *Inequality* (1972), which found few if any significant effects of schooling on achievement, job success, and earning power.

The middle 1970s brought a renewed focus on the effects of the school environment—the curriculum, classroom and school organization, and teacher characteristics.

A study of the effects of different follow-through programs on achievement in reading, arithmetic, problem solving, and creativity at the end of grade 3 found that the more structured programs—that is, those that taught reading directly, systematically, and provided the time for practice—produced significantly higher reading achievement (Stallings, 1975).

Similar results were found recently in England. A study of the effects of teaching style on reading achievement concluded that "the effect of teaching style is statistically and educationally significant in all attainment areas tested. In reading, pupils of formal and mixed teachers progress more than those of informal teachers, the difference being equivalent to some three to five months' difference in performance" (Bennett, 1976, p. 152).

Benjamin Bloom (1976) summarizes the effects of various environmental factors—teachers, teaching style, aspects of the curriculum, etc.—on reading and other school achievements. Overall, striking evidence is presented concerning the importance of the school.

The decade began with a very strong emphasis on the potency of home background. We finish the decade with renewal of faith in the school.

Conclusion

This has indeed been a decade of change. Within 10 years or less the conventional wisdom on the most basic issues reversed itself. The reversal was found in research findings, in research summaries, and also in practice—in changes in the curriculum, in instructional materials, and in the materials used for educating teachers in the teaching of reading.

The decade can be characterized by a strong social conscience for improving the reading ability of all people—particularly those who have not achieved as well as they should. Many governmental agencies have been involved in reading improvement.

Paralleling this growth was a growth in professional organizations devoted to the improvement of reading and to the prevention and treatment of reading disabilities.

Growth in the science of reading was also great. Scientists from many disciplines—psychology, linguistics, computer sciences, and neurology—joined the reading specialists and educational psychologists in studies of the reading process, the relationship of language to reading, the causes of severe reading disabilities, etc. The effects of this research on practice are not fully known as yet. Some of the research had almost immediate application and use. Some, it seems, may have been useful in confirming what good teachers already knew and were practicing. Altogether, the higher scores in reading, particularly for students in the lower grades, would seem to indicate that reading research contributed to these gains. The great abundance of research sometimes made the practitioner feel overwhelmed and left out. As the decade moved on, there was a greater collaboration among the different scientists and a general improvement in the relevance of the research for theories of reading and for practice.

The changes in the consensus on fundamental issues of how, when, and where to start teaching the child to read were considerable. And these changes seem to have been supported by research. It is to be hoped that current proposals to return to positions prevalent before the decade are accompanied by appropriate research evidence.

Interest in research and development of programs for reading at more mature levels, and in criterion and mastery tests, will no doubt increase for some time to come. At the end of the decade, among the most promising trends from research and practice is the recognition of the power of optimal school environments for the improvement of reading achievement, particularly for those disposed to failure. The research evidence is beginning to accumulate that schools, teachers, textbooks, and the additional help given pupils when they need it are crucial in the progress children make. Indeed, the difference between optimal and poor school conditions may be the difference between pupils who succeed and pupils who fail.

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